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AMSAT NEWS SERVICE
ANS-169

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The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, the Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to: ans-editor [at] amsat.org

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ANS-169 AMSAT News Service Weekly Bulletins

To: All RADIO AMATEURS
From: Radio Amateur Satellite Corporation
712 H Street NE, Suite 1653
Washington, DC 20002

DATE 2023 June 18

Spain's URESAT-1 Collaborative Satellite Launches on SpaceX Transporter-8

The URESAT-1 satellite, also known as HADES-B according to its ITU designation, successfully launched into space as part of the SpaceX Transporter-8 mission from Vandenberg AFB on Monday, June 12. The satellite is a joint effort between AMSAT-EA, URE (the Spanish equivalent of ARRL), private companies, and universities.

The URESAT-1 satellite, contained within the D-Orbit ION Orbital Transfer Vehicle (OTV), was not deployed directly from the Falcon-9 rocket. Instead, approximately one hour and twenty minutes after launch, the Falcon-9 released the OTV, which will orbit the Earth for several days before deploying URESAT-1, along with other satellites.

One of the primary objectives of URESAT-1 is to serve as an FM voice and FSK data repeater. Equipped with a Slow Scan Television (SSTV) camera, the satellite will transmit live images as well as stored images at regular intervals. It also features a chess game, enabling players on Earth to engage in a game against the satellite. Periodically, the satellite will transmit updates on the state of the game, including the chess board, the last movement made, and whether the next move belongs to the players or the satellite.

The specified frequencies for communication with URESAT-1 are as follows: for uplink transmissions, 145.975 MHz or 145.925 MHz (auxiliary frequency) using FM voice without subtone, FSK 50 bps, AFSK, AX.25, APRS 1200/2400 bps. For downlink transmissions, the frequency is set at 436.888 MHz, and modes include FM voice, CW, FSK 50 bps telemetry, SSTV Robot 36, and a voice beacon with the callsign AO4URE.

To provide further information regarding URESAT-1's transmissions, the AMSAT-EA organization has made available a comprehensive document that can be accessed at the following link:
https://www.amsat-ea.org/app/download/13366685/AMSAT+EA+-+URESAT-1+Transmissions+description.pdf

For those interested in decoding the telemetry, a Linux x86/ARM decoder is available for download at the following link:
https://www.amsat-ea.org/app/download/13395017/URESAT-1_telemetry_decoder_Linux_X86_ARM_v1.0.zip

A sample file containing the audio of a telemetry file can be found here:
https://www.amsat-ea.org/app/download/13398144/URESAT-1_sample_FSK_telemetry-chessboard_packet.wav

If URESAT-1 operates as intended, the project team plans to release a Linux program that will allow players to send their chess moves to the satellite, further enhancing the interactive experience.

[ANS thanks Félix Páez, EA4GQS, AMSAT-EA President for the above information]

SpaceX's Transporter-8 Mission Launches a Diverse Array of Smallsat Missions

SpaceX's Transporter-8 mission successfully lifted off from Vandenberg Space Force Base in California during its afternoon launch window on Monday, June 12. Part of SpaceX's small satellite (smallsat) rideshare program, Transporter-8 carries dozens of small to pico-sized satellites and orbital test vehicles. This launch marks the 38th Falcon 9 rocket launch of 2023, showcasing the rocket's significance as the major workhorse in the space industry.

As a rideshare launch, Transporter-8 doesn't have a primary mission but aims to lower costs for small spacecraft operators. The launch manifest for Transporter-8 includes an eclectic variety of missions. Among them is URESAT-1, a 1.5 P Pocketqube spacecraft from AMSAT-EA and the Spanish Amateur Radio Union (URE), equipped with an amateur radio payload that will attempt to play chess against opponents on Earth.

Transporter-8's diverse manifest demonstrates the wide range of missions being pursued, from space manufacturing technology demonstration by Varda Space Industries to two cryptocurrency technology satellites (CRYPTO3 and MOXY-1) and a communications satellite for the Vatican (SpeiSat). This blend of missions highlights the growing importance and potential of small satellite deployments.

With its rideshare model, SpaceX is enabling more affordable access to space for small spacecraft operators. By sharing the launch vehicle with multiple payloads, the costs are distributed among different customers, allowing them to realize their space ambitions at a fraction of the cost of a dedicated launch.

The success of Transporter-8 adds to SpaceX's impressive track record, and if the company maintains its launch pace while incorporating successful Falcon Heavy rocket launches, it could be on track to achieve Elon Musk's ambitious target of 100 rocket launches by the end of 2023. SpaceX's dedication to advancing space exploration and commercial satellite deployments is evident in its consistent launch operations and commitment to driving innovation in the industry.

[ANS thanks Jon Kelvey, writing for SpaceRef, for the above information]

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European Space Agency and S5Lab Announce LEDSAT Digipeater Challenge

The European Space Agency's (ESA) Fly Your Satellite! program in collaboration with S5Lab is offering a unique opportunity for radio amateurs around the world. The challenge is to establish communication through the LEDSAT CubeSat digipeater, providing a chance to win a special prize: a QSL card issued by the ESA Education Office and the LEDSAT team. Running from June 26 to July 30, this challenge allows radio enthusiasts to engage with space technology and showcase their communication skills.

LEDSAT, developed by students from Sapienza University in Rome's S5Lab research team with support from AMSAT Italia, is an educational 1U CubeSat that participated in the second edition of the Fly Your Satellite! program. Its primary objective is to demonstrate a LED-based payload for ground-based optical tracking. The successful launch of LEDSAT on Vega flight VV19 on August 17, 2021, marked a significant milestone for the project. To celebrate the launch, a competition was launched, encouraging participants from around the world to record the first signs of life from the spacecraft.

To participate in the challenge, radio amateurs are invited to send a message to the ESA Education Office ESTEC Ground Station, with the callsign PI9ESA. The digipeater will be activated during specific time windows, with operators stationed at the ground station to receive incoming messages. Upon successful reception of a message, the sender's callsign and contact details will be documented on a personalized QSL card, acknowledging their accomplishment.

The LEDSAT digipeater can store and retransmit digital messages sent to the satellite, acting as a transponder for long-distance communication. Messages can be retransmitted immediately or with an optional delay of up to two days.

LEDSAT follows a Sun-Synchronous orbit, resulting in two communication windows each day – around midday and midnight – where contact can be established. Participants can predict passes precisely above the ESTEC ground station or their area of residence by using their favorite pass prediction software or obtaining the latest Two-Line Elements for LEDSAT from https://celestrak.org/NORAD/elements/gp.php?CATNR=49069.

Due to LEDSAT's monitoring and housekeeping requirements and the potential high demand from operators, the digipeater activation time slots will follow a pattern of one day ON and one day OFF, with the switch-on/off always occurring at 00:00 UTC. This schedule will begin on Monday, June 26th at 00:00 UTC, and conclude on Sunday, July 30th at 24:00 UTC.

While the challenge is supported by operators on a voluntary basis, efforts will be made to cover as many LEDSAT passes as possible, especially those occurring around local midday on weekdays. A detailed schedule of pass coverage will be published, so participants are advised to regularly check for updates.

The LEDSAT digipeater uplink frequency is 435.310 MHz, the downlink frequency is 435.190 MHz, and the modulation type is GMSK using a CSP + Golay + ASM (AX100 Mode 5) protocol at 1200 baud. The LEDSAT team has prepared a software package and a user manual for connecting to the digipeater, available for download on the LEDSAT website at https://www.s5lab.space/index.php/ledsat-digipeater/.

It is important to note that transmitting to the satellite is prohibited for those who are not licensed radio amateurs. However, non-licensed individuals can still participate in the challenge by listening to the messages transmitted by the ESTEC ground station. If they provide evidence of successful reception, including the date and time, they may also receive a customized QSL card.

Participants are encouraged to mark their calendars, prepare their messages, and not miss the chance to connect and communicate with the LEDSAT spacecraft to receive their QSL card. Let's come together and make this event a memorable celebration of our shared passion for space exploration and amateur radio communication.

For any inquiries regarding LEDSAT or the digipeater challenge, please email cubesats(a)esa.int.

[ANS thanks the European Space Agency along with S5Lab for the above information]

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and M2 LEO-Packs from the AMSAT Store. When you purchase through
AMSAT, a portion of the proceeds goes towards
Keeping Amateur Radio in Space.
https://amsat.org/product-category/hardware/

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17	ND0C	42	AA5PK	67	KB2YSI	92	YU0W
18	KX9X	43	AA8CH	68	AC0RA	93	VO1FUA
19	KB5FHK	44	KE9AJ	69	XE1ET	94	W8MTB
20	VE3HLS	45	VA7LM	70	LU4JVE	95	LU5UFM
21	LU5ILA	46	K7TAB	71	K0FFY	96	JR8QFG
22	N7AGF	47	VE1VOX	72	KG4AKV	97	VE7PTN
23	KI7UNJ	48	M1DDD	73	KC7JPC	98	FG8OJ
24	ON4AUC	49	VE3GOP	74	CU2ZG	99	HB9WDF
25	KG5CCI	50	KM4LAO	75	K4DCA	100	K0JM

[ANS thanks @GridmasterMasterMap for the above information]

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The ARISS mentor is ON6TI
Contact is go for: Thu 2023-06-22 08:38:52 UTC

The crossband repeater continues to be active (145.990 MHz up {PL 67} & 437.800 MHz down). If any crewmember is so inclined, all they have to do is pick up the microphone, raise the volume up, and talk on the crossband repeater. So give a listen, you just never know.

The packet system is also active (145.825 MHz up & down).

As always, if there is an EVA, a docking, or an undocking; the ARISS radios are turned off as part of the safety protocol.

Note, all times are approximate. It is recommended that you do your own orbital prediction or start listening about 10 minutes before the listed time.

The latest information on the operation mode can be found at
https://www.ariss.org/current-status-of-iss-stations.html

The latest list of frequencies in use can be found at https://www.ariss.org/contact-the-iss.html

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors for the above information]

Upcoming Satellite Operations

To include your satellite roving plans in the AMSAT News Service Weekly bulletins, send them to Ian, K5ZM at k5zm (at) comcast (dot) net at least a couple of weeks in advance. Upcoming satellite operations are updated weekly on the AMSAT Upcoming Satellite Operations page but may expire before the next AMSAT News Service bulletin is released. You can watch for the latest roving information to become available at https://www.amsat.org/satellite-info/upcoming-satellite-operations/.

A growing number of satellite rovers are currently engaged in sharing their grid square activations on https://hams.at. By visiting the website, you gain easy access to comprehensive information about the operators responsible for activating specific grid squares. Additionally, you have the ability to assess the match score between yourself and a particular rover for a given pass, while also being able to identify the upcoming satellite passes that are accessible from your location.

[ANS thanks Ian Parsons, K5ZM, AMSAT rover page manager, for the above information]

Hamfests, Conventions, Maker Faires, and Other Events

AMSAT Ambassadors provide presentations, demonstrate communicating through amateur satellites, and host information tables at club meetings, hamfests, conventions, maker faires, and other events.

+ AMSAT 2023 Field Day
  June 24, 1800 UTC - June 25, 2100 UTC, 2023
  More information at: https://www.amsat.org/field-day/.

+ Small Satellite Conference
  August 5-10, 2023
  Utah State University, Logan, UT
  More information at: https://smallsat.org/.

+ AMSAT Space Symposium and Annual General Meeting
  October 20-21, 2013
  Dallas, Texas
  More information to follow.

[ANS thanks AMSAT for the above information]

Satellite Shorts From All Over

+ Congratulations to Ian Parsons, K5ZM, for providing satellite contacts from an impressive 104 grid squares and earning AMSAT VUCC/r Award # 12! The Reverse VUCC or VUCC/r Award, originally introduced by the Central States VHF Society and now carried on by AMSAT, acknowledges the efforts of satellite rovers like Ian. More information about this award can be found on the AMSAT website at https://www.amsat.org/reverse-vucc-or-vucc-r-award. Keep on roving, Ian, and continue to inspire others in the AMSAT community!

+ Congratulations to Terry, AJ4A, for being awarded GridMaster Award # 57! This prestigious award, introduced by Star Comm Group in 2014 and sponsored by Damon Runion, WA4HFN, and Rick Tillman, WA4NVM, is now entrusted to AMSAT for the benefit of the entire AMSAT community. The GridMaster Award recognizes amateurs worldwide who establish two-way communication via amateur satellite with operators in all 488 Maidenhead grids in the contiguous United States of America. More information about this award can be found on the AMSAT website at https://www.amsat.org/gridmaster/. Well done on this remarkable achievement Terry!

+ E2QRP special event station will operate on QO-100 and Low Earth Orbit (LEO) satellites that pass over Thailand during IARU QRP Day. The Radio Amateur Society of Thailand (RAST) operators will be on the air from grid OK04nk on June 16 , 2023 at 12.00 UTC until June 18, 2023 at 5.00 UTC. QSL via Thailand HS Bureau or direct from RAST, G.P.O. Box 2008 Bangkok Thailand. (ANS thanks Tanan Rangseeprom, HS1JAN, for the above information)

+ The Small Satellite Conference provides an extensive series of talks, speed sessions, and posters that focus on successfully carrying out a small satellite mission. From early wildfire detection using CubeSat images to UHF ground stations for controlling satellites, topics vary wildly. The conference takes place August 5-10, 2023 at Utah State University, Logan, Utah. (ANS thanks Amateur Radio Daily for the above information)

+ Have your name etched onto a microchip mounted on NASA’s Europa Clipper expedition to explore Jupiter's icy moon: https://europa.nasa.gov/message-in-a-bottle/sign-on/ (ANS thanks The Orbital Index and NASA for the above information)

+ United Launch Alliance (ULA) briefly test-fired the first-stage engines on its new Vulcan Centaur rocket on Wednesday evening (June 7), completing a crucial milestone for the booster’s first flight. Vulcan Centaur is designed to replace ULA’s current fleet of Atlas V and Delta IV Heavy launch vehicles. The first stage can be supplemented with strap-on solid rocket boosters for heavier payloads. ULA is gearing up for the first Vulcan Centaur launch, which is likely to occur in July. The rocket’s primary payload will be Astrobotic Technology’s Peregrine lunar lander, which will carry payloads for NASA and private companies under the space agency’s Commercial Lunar Payload Services program. Vulcan Centaur will also carry the KuiperSat-1 and KuiperSat-2 demonstration satellites for Amazon. The spacecraft will demonstrate technology for the company’s 3,236-satellite broadband constellation. (ANS thanks the Parabolic Arc for the above information)

+ Capturing footage of the International Space Station (ISS) hurtling through space at approximately 17,500 mph (28,000 km/h) is no mean feat, yet French astrophotographer Thierry Legault has pulled it off yet again. In his latest stunning footage, captured on June 9, Legault imaged the ISS whizzing past three sunspot groups. The entire solar transit lasted just 0.75 seconds. In addition, Legault captured these shots while two NASA astronauts, Stephen Bowen, KI5BKB, and Warren "Woody" Hoburg, KB3HTZ, were carrying out a spacewalk to install a new solar array outside the station. (ANS thanks Space.com for the above information)

Join AMSAT today at https://launch.amsat.org/

In addition to regular membership, AMSAT offers membership to:

* Societies (a recognized group, clubs or organization).
* Primary and secondary school students are eligible for membership at one-half the standard yearly rate.
* Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status.

* Memberships are available for annual and lifetime terms.

Contact info [at] amsat.org for additional membership information.

73 and remember to help Keep Amateur Radio in Space!

This week's ANS Editor, Mitch Ahrenstorff, ADØHJ
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